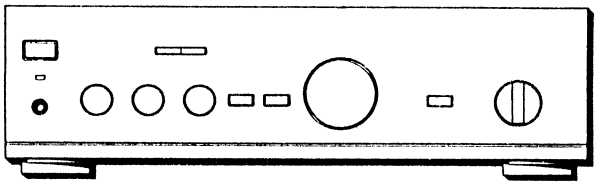
S/M Code No.91 – 110 DATE OF ISSUE 1/1992 – I

# AIWA®

# XA-003

# SERVICE MANUAL



STEREO INTEGRATED AMPLIFIER

• TYPE. H,E,K,Z

## SPECIFICATIONS

### Common

**Power requirements**
XA-003H
AC 120 V/220 V/240 V switchable, 50/60 Hz
XA-003E, Z
AC 220 V, 50 Hz
XA-003K
AC 240 V, 50 Hz

**Power consumption**
XA-003H 100 W
XA-003E, K, Z 260 W

### Power amplifier

**Effective output power**
53 W+53 W
(4 ohms, T.H.D. 0.9%, 1 kHz)
40 W+40 W
(8 ohms, T.H.D. 0.9%,1 kHz)

**Total harmonic distortion**
0.02%
(20 Hz–20 kHz, 30 W, 8 ohms)

**Output bandwidth**
20 Hz–50 kHz
(less than 0.07%)
[Both channels driven, 8 ohms]

**Frequency response**
5 Hz–100 kHz
(+0.5/–3 dB)

### Preamplifier

**S/N ratio** IHF A curve short circuited
PHONO (MM) 88dB
(5mV input)
TUNER, CD, AUX, TAPE/DAT 105 dB

**Input jacks (Sensitivity/input impedance)**
PHONO (MM)
2.5 mV/47 kohms
TUNER, CD, AUX, TAPE/DAT
150 mV/47 kohms

**PHONO overload level**
85 mV (MM)
[1 kHz, T.H.D 0.01%]

**Output jacks (Level/output impedance)**
TAPE 150 mV/47 kohms
Headphones 8–32 ohms
Speakers 4–16 ohms
(A+B: 8–16 ohms)

**RIAA deviation** ±0.5 dB (30 Hz–15 kHz)

**Maximum dimensions**
430(W) × 128(H) × 332(D) mm
(17 × 5 1/8 × 13 1/8 inches)

**Weight** 6.3 kg
(13.86 lb)

• Design and specifications are subject to change without notice.

*MC-Service*

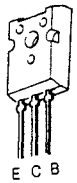
AIWA Co., Ltd. Tokyo Japan

Printed in Japan

# ELECTRICAL MAIN PARTS LIST

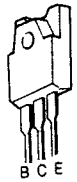
| REF. NO. | PART NO. | DESCRIPTION |
|---|---|---|
| === IC === | | |
| | 87-001-383-010 | IC, M5220P |
| | 87-001-171-019 | IC, NJM2068D |
| | 87-027-897-019 | IC, UPC1225H |
| | 87-027-787-019 | IC, UPC1237H |
| === TRANSISTOR === | | |
| | 89-110-155-019 | TRANSISTOR, 2SA1015GR |
| | 89-118-032-310 | TRANSISTOR, 2SA1803RO |
| | 89-213-302-319 | TRANSISTOR, 2SB1330 |
| | 89-322-405-019 | TRANSISTOR, 2SC2240GR |
| | 89-334-194-010 | TRANSISTOR, 2SC3419Y |
| | 89-346-882-310 | TRANSISTOR, 2SC4688RO |
| | 89-420-062-319 | TRANSISTOR, 2SD2006 |
| | 87-026-369-019 | TRANSISTOR, RN1207 |
| === DIODE === | | |
| | 87-001-783-019 | DIODE 1N4002-T |
| | 87-001-749-010 | DIODE D5SB20 |
| | 87-020-123-019 | DIODE DS446-AT |
| | 87-001-559-019 | DIODE 1SS131 |
| | 87-027-449-019 | DIODE, ZENER HZ15-3L |
| === MAIN CIRCUIT BOARD SECTION === | | |
| C3 | ★87-018-121-019 | CAP, CERA-SOL SS 150P-50(Z ONLY) |
| C4 | ★87-018-121-019 | CAP, CERA-SOL SS 150P-50(Z ONLY) |
| C5 | ★87-018-121-019 | CAP, CERA-SOL SS 150P-50(Z ONLY) |
| C6 | ★87-018-121-019 | CAP, CERA-SOL SS 150P-50(Z ONLY) |
| C7 | ★87-018-121-019 | CAP, CERA-SOL SS 150P-50(Z ONLY) |
| C8 | ★87-018-121-019 | CAP, CERA-SOL SS 150P-50(Z ONLY) |
| C9 | ★87-018-121-019 | CAP, CERA-SOL SS 150P-50(Z ONLY) |
| C10 | ★87-018-121-019 | CAP, CERA-SOL SS 150P-50(Z ONLY) |
| C11 | ★87-018-121-019 | CAP, CERA-SOL SS 150P-50(Z ONLY) |
| C12 | ★87-018-121-019 | CAP, CERA-SOL SS 150P-50(Z ONLY) |
| C21 | ★87-018-134-019 | CAP, CERA-SOL SS 0.01-16 |
| C31 | ★87-010-404-019 | CAP, ELECT 4.7-50 SME |
| C32 | ★87-010-404-019 | CAP, ELECT 4.7-50 SME |
| C33 | ★87-018-125-019 | CAP, CERA-SOL SS 330P-50 |
| C34 | ★87-018-125-019 | CAP, CERA-SOL SS 330P-50 |
| C35 | ★87-010-370-019 | CAP, ELECT 330-6.3 SME |
| C36 | ★87-010-370-019 | CAP, ELECT 330-6.3 SME |
| C43 | ★87-010-260-019 | CAP, ELECT 47-25 SME |
| C44 | ★87-010-260-019 | CAP, ELECT 47-25 SME |
| C45 | ★87-010-404-019 | CAP, ELECT 4.7-50 SME |
| C46 | ★87-010-404-019 | CAP, ELECT 4.7-50 SME |
| C51 | ★87-010-405-019 | CAP, ELECT 10-50 SME |
| C52 | ★87-010-405-019 | CAP, ELECT 10-50 SME |
| C53 | ★87-018-131-019 | CAP, CERA-SOL SS 1000P-50 |
| C54 | ★87-018-131-019 | CAP, CERA-SOL SS 1000P-50 |
| C55 | ★87-010-247-019 | CAP, ELECT 100-50 SME |
| C56 | ★87-010-247-019 | CAP, ELECT 100-50 SME |
| C61 | ★87-010-405-019 | CAP, ELECT 10-50 SME |
| C62 | ★87-010-405-019 | CAP, ELECT 10-50 SME |
| C67 | ★87-018-115-019 | CAP, CERA-SOL SS 47P-50 |
| C68 | ★87-018-115-019 | CAP, CERA-SOL SS 47P-50 |
| C69 | ★87-018-119-019 | CAP, CERA-SOL SS 100P-50(Z ONLY) |
| C70 | ★87-010-401-019 | CAP, ELECT 1-50 SME |
| C71 | ★87-018-131-019 | CAP, CERA-SOL SS 1000P-50 |
| C72 | ★87-010-762-019 | CAP, ELECT, 220-10 BP |
| C74 | ★87-010-405-019 | CAP, ELECT 10-50 SME |
| C75 | ★87-010-260-019 | CAP, ELECT 47-25 SME |
| C77 | ★87-018-131-019 | CAP, CERA-SOL SS 1000P-50 |
| C78 | ★87-018-131-019 | CAP, CERA-SOL SS 1000P-50 |
| C81 | ★87-010-756-010 | CAP, ELECT 6800-50 |
| C82 | ★87-010-756-010 | CAP, ELECT 6800-50 |
| C83 | ★87-010-260-019 | CAP, ELECT 47-25 SME |
| C84 | ★87-010-260-019 | CAP, ELECT 47-25 SME |
| C85 | ★87-010-260-019 | CAP, ELECT 47-25 SME |
| C86 | ★87-010-260-019 | CAP, ELECT 47-25 SME |
| C87 | ★87-010-247-019 | CAP, ELECT 100-50 SME |
| C109 | ★87-018-134-019 | CAP, CERA-SOL SS 0.01-16(Z ONLY) |
| C110 | ★87-018-134-019 | CAP, CERA-SOL SS 0.01-16(Z ONLY) |
| J1 | ★87-009-395-010 | JACK PIN 6P EARTH(INPUT) |
| J2 | ★87-009-392-010 | JACK PIN 6P(INPUT, TAPE) |
| J3 | ★87-033-210-010 | TERMINAL, 8P SPKR(SPEAKERS)(H, K, Z) |
| J3 | ★87-033-222-010 | TERMINAL, 8P SPKR HOLE(SPEAKER)(E) |
| L1 | ★87-005-366-010 | COIL, 1UH |
| L2 | ★87-005-366-010 | COIL, 1UH |
| L3 | ★87-005-154-019 | COIL 220UH |
| L4 | ★87-005-154-019 | COIL 220UH |
| L5 | ★87-005-154-019 | COIL 220UH |
| L6 | ★87-005-154-019 | COIL 220UH |
| ⚠R83 | ★81-AA3-619-010 | RES, CEMENT 0.22-5W |
| ⚠R84 | ★81-AA3-619-010 | RES, CEMENT 0.22-5W |
| ⚠R95 | ★87-025-487-019 | RES, MF 10-1W |
| ⚠R96 | ★87-025-487-019 | RES, MF 10-1W |
| ⚠R99 | 87-029-366-019 | FUSE, RES 4.7-1/2W FM |
| ⚠R100 | 87-029-366-019 | FUSE, RES 4.7-1/2W FM |
| ⚠R101 | 87-029-124-019 | RES, FUSE 2.2-1/4W |
| ⚠R121 | ★87-025-476-019 | RES, NF 33-1/4WJ |
| ⚠R122 | ★87-025-476-019 | RES, NF 33-1/4WJ |
| ⚠R127 | ★87-025-471-019 | RES, NF 4.7-1/4WJ |
| ⚠R128 | ★87-025-471-019 | RES, NF 4.7-1/4WJ |
| RY1 | 87-045-334-010 | RELAY, G5Z-24SP |
| S1 | 81-AA3-633-010 | ROTARY SW 2-4-4(FUNCTION) |
| S2 | 80-AA1-635-110 | PUSH SW 1-2-2(TAPE MONITOR) |
| S6 | 80-AA1-634-110 | PUSH SW 1-2-2SP(SPEAKER A) |
| S7 | 80-AA1-634-110 | PUSH SW 1-2-2SP(SPEAKER B) |
| SFR1 | ★87-024-165-019 | SFR, 220 |
| SFR2 | ★87-024-165-019 | SFR, 220 |
| === FRONT CIRCUIT BOARD SECTION === | | |
| C121 | ★87-018-126-019 | CAP, CERA-SOL SS 390P-50 |
| C122 | ★87-018-126-019 | CAP, CERA-SOL SS 390P-50 |
| C125 | ★87-010-401-019 | CAP, ELECT 1-50 SME |
| C126 | ★87-010-401-019 | CAP, ELECT 1-50 SME |
| C127 | ★87-018-117-019 | CAP, CERA-SOL SS 68P-50 |
| C128 | ★87-018-117-019 | CAP, CERA-SOL SS 68P-50 |
| C129 | ★87-010-382-019 | CAP, ELECT 22-25 SME |
| C130 | ★87-010-382-019 | CAP, ELECT 22-25 SME |
| C137 | ★87-018-123-019 | CAP, CERA-SOL SS 220P-50 |
| C138 | ★87-018-123-019 | CAP, CERA-SOL SS 220P-50 |
| C141 | ★87-010-382-019 | CAP, ELECT 22-25 SME |
| C142 | ★87-010-382-019 | CAP, ELECT 22-25 SME |
| C143 | ★87-010-260-019 | CAP, ELECT 47-25 SME |
| C144 | ★87-010-260-019 | CAP, ELECT 47-25 SME |
| C145 | ★87-018-134-019 | CAP, CERA-SOL SS 0.01-16 |
| C146 | ★87-018-134-019 | CAP, CERA-SOL SS 0.01-16 |
| S3 | 80-AA1-635-110 | PUSH SW 1-2-2(LOUDNESS) |
| S4 | 80-AA1-636-110 | PUSH SW 1-4-2(DIRECT) |
| VR1 | 80-AA1-630-010 | VOLUME, 100KB(VOLUME) |
| VR2 | 80-AA1-631-010 | VOLUME, 100K(BALANCE) |
| VR3 | 80-AA1-632-010 | VOLUME, 50KC(BASS) |
| VR4 | 80-AA1-632-010 | VOLUME, 50KC(TREBLE) |
| === POWER CIRCUIT BOARD SECTION === | | |
| ⚠ | ★87-033-213-019 | CLAMP FUSE |
| C88 | 87-014-210-019 | CAP, MYLER 0.047-250 |

| REF. NO. | PART NO. | DESCRIPTION |
|---|---|---|
| C89 | 87-014-210-019 | CAP, MYLER 0.047-250 |
| △F1 | 87-035-224-019 | FUSE T1.6A |
| △F2 | 87-035-224-019 | FUSE T1.6A |
| △PT1 | 81-AA3-606-019 | POWER TRANSFORMER H(H ONLY) |
| △PT1 | 81-AA3-608-019 | POWER TRANSFORMER E(E, Z) |
| △PT1 | 81-AA3-609-019 | POWER TRANSFORMER K(K ONLY) |
| ::: POWER SW CIRCUIT BOARD SECTION ::: | | |
| △C111 | ★87-019-112-019 | SPARK KILLER 0.01 E |
| J4 | 87-009-043-019 | JACK, 6.3(PHONES) |
| △S8 | 87-036-210-010 | PUSH SW 1-1-1X1(POWER) |
| ::: LED CIRCUIT BOARD SECTION ::: | | |
| LED1 | 87-001-779-019 | LED, SLH-56VC 70F165(POWER) |
| ::: AC VOLTAGE SW CIRCUIT BOARD SECTION (H ONLY) ::: | | |
| △S9 | 87-036-067-019 | SLIDE SW 2-2-4(AC VOLTAGE) |
| ::: MISCELLANEOUS ::: | | |
| △ | ★82-187-796-019 | AC CORD, BS(K ONLY) |
| △ | ★82-187-797-019 | AC CORD, E(E, Z) |
| △ | ★87-034-749-019 | AC CORD, H W/PLUG(H ONLY) |
| △ | ★87-085-184-010 | BUSHING, AC CORD D(H ONLY) |
| △ | ★87-085-185-010 | BUSHING, AC CORD E(E, K, Z) |

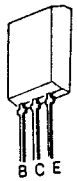



2SC3419

2SA1015
2SC2240




2SA1083
2SC4688




2SB1330
2SD2006



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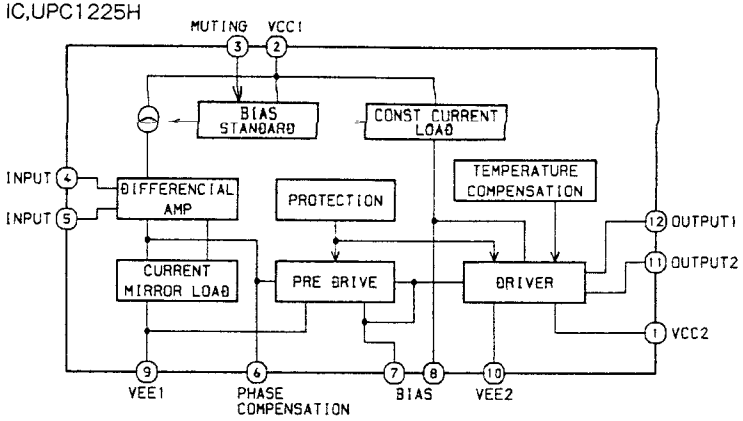
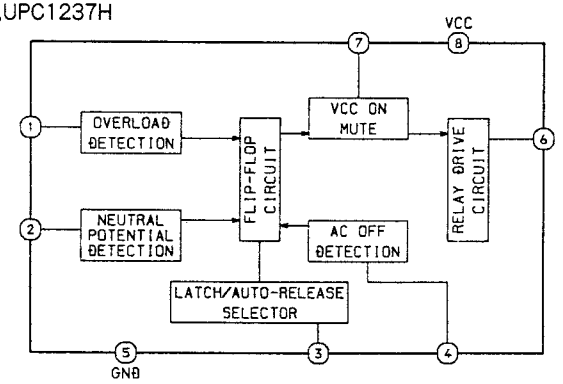
## IC BLOCK DIAGRAM

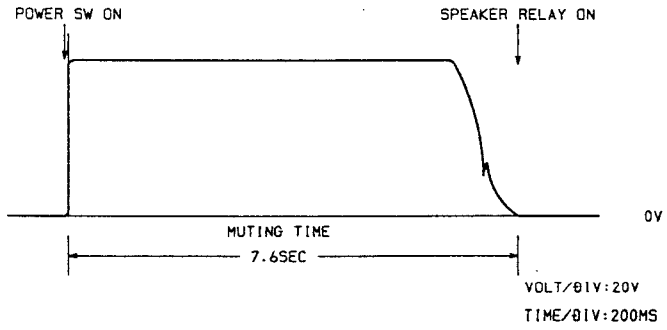
IC,UPC1225H

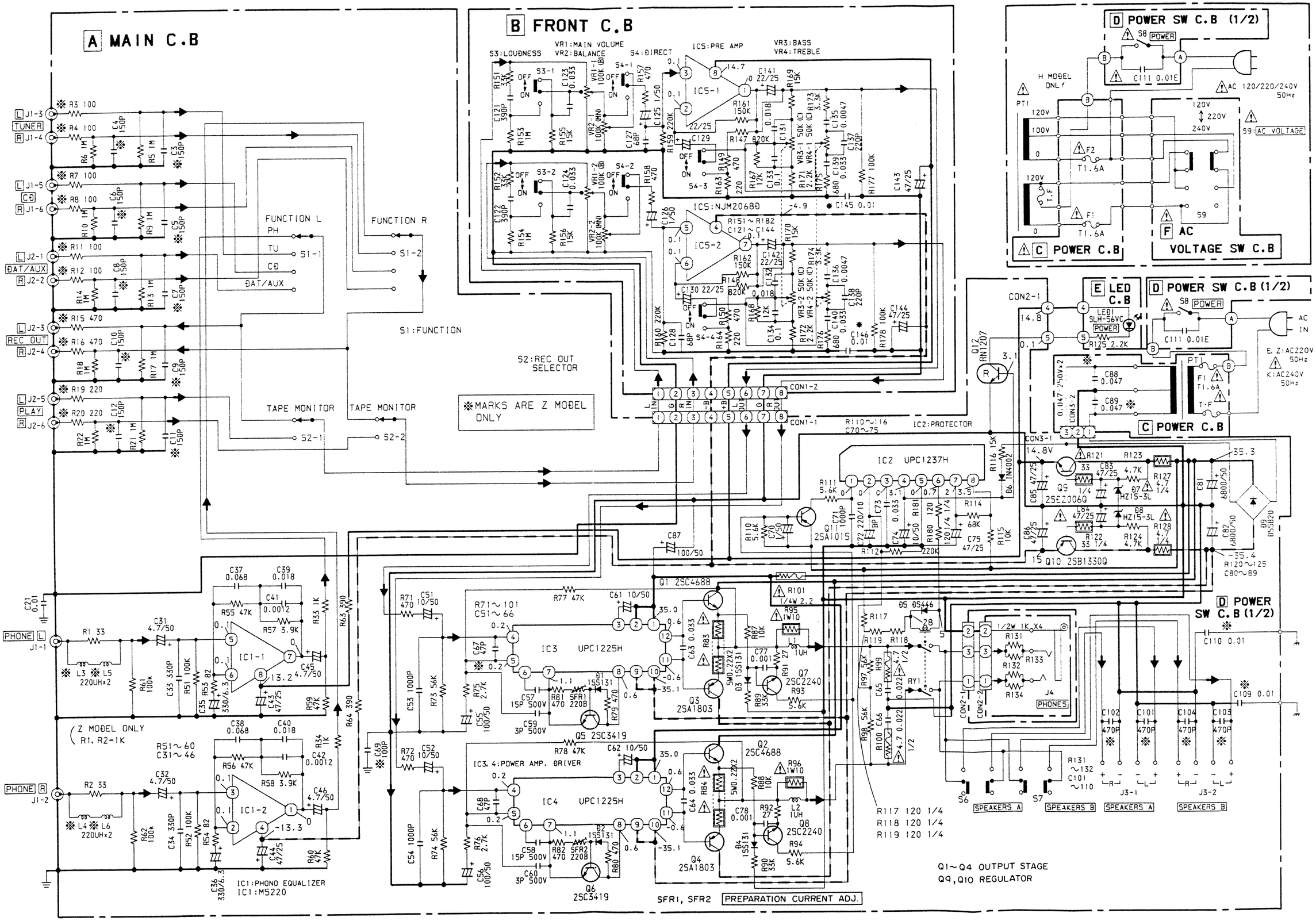


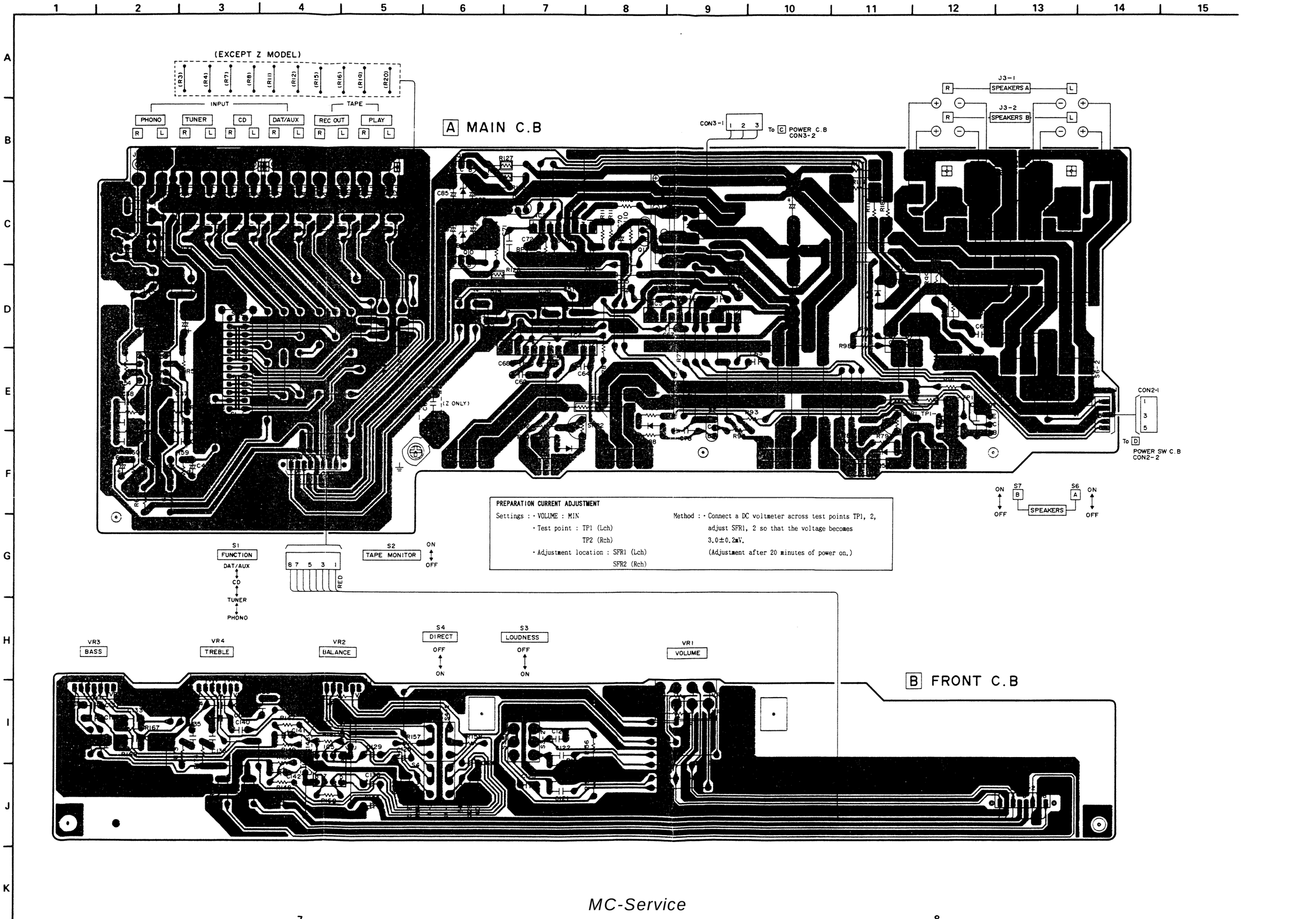

IC,UPC1237H

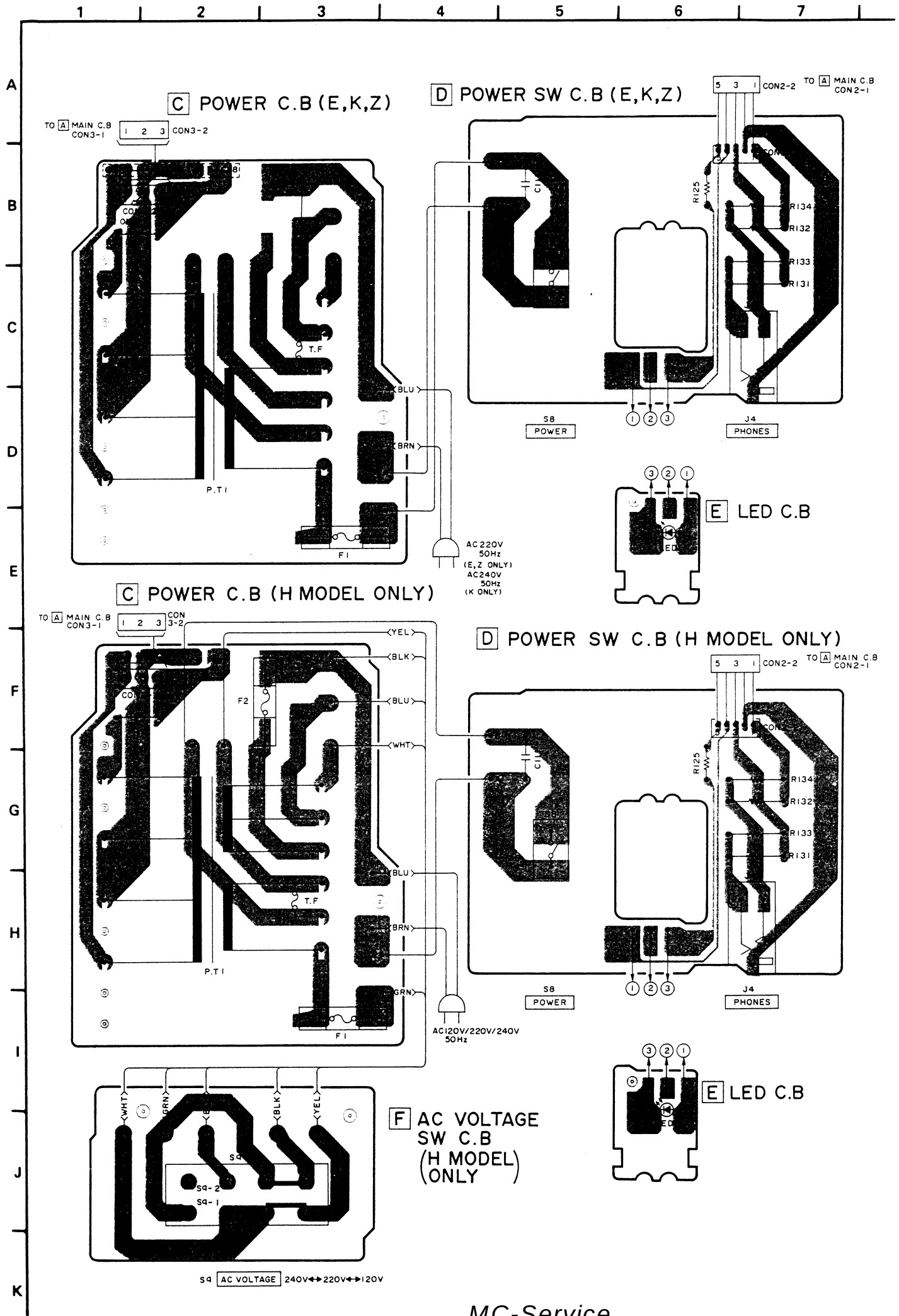



IC2 UPC1237H PIN ⑦VOLTAGE WAVE FORM



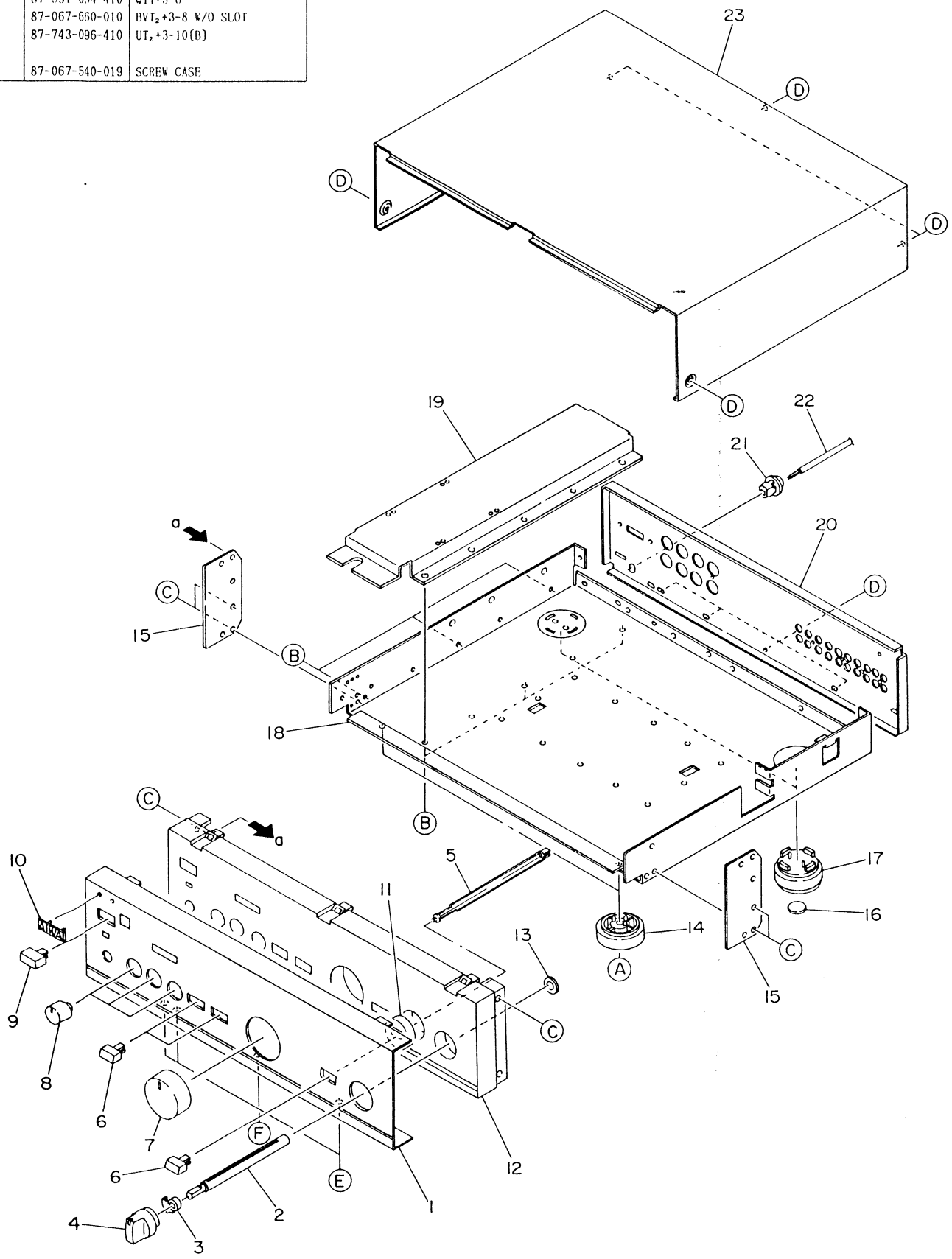

A MAIN C.B
B FRONT C.B
D POWER SW C.B (1/2)
C POWER C.B
E LED C.B
F AC VOLTAGE SW C.B
VR1:MAIN VOLUME
VR2:BALANCE
S3:LOUDNESS
S4:DIRECT
IC5:PRE AMP
VR3:BASS
VR4:TREBLE
IC5:NJM2068D
IC5-1
IC5-2
FUNCTION L
FUNCTION R
S1:FUNCTION
S2:REC OUT SELECTOR
TAPE MONITOR
※MARKS ARE Z MODEL ONLY
IC1:PHONO EQUALIZER
IC1:M5220
Z MODEL ONLY
R1, R2=1K
IC3 UPC1225H
IC4 UPC1225H
IC3, 4:POWER AMP. DRIVER
Q1 2SC4688
Q2 2SC4688
Q3 2SA1803
Q4 2SA1803
Q5 2SC3419
Q6 2SC3419
Q7 2SC2240
Q8 2SC2240
Q1 2SA1015
Q9 2SD2060Q
Q10 2SB1330Q
IC2 UPC1237H
IC2:PROTECTOR
SFR1, SFR2 PREPARATION CURRENT ADJ.
Q1~Q4 OUTPUT STAGE
Q9, Q10 REGULATOR
SPEAKERS A
SPEAKERS B
PHONES
AC 120/220/240V 50Hz
AC IN
E, Z:AC220V 50Hz
K:AC240V 50Hz
POWER SW C.B (1/2)


(EXCEPT Z MODEL)
(R3) (R4) (R7) (R8) (R11) (R12) (R15) (R16) (R19) (R20)
INPUT
TAPE
PHONO
TUNER
CD
DAT/AUX
REC OUT
PLAY
R L R L R L R L R L R L
A MAIN C.B
CON3-1
1 2 3
To C POWER C.B CON3-2
J3-1
SPEAKERS A
J3-2
SPEAKERS B
R L
CON2-1
1 3 5
To D
POWER SW C.B CON2-2
(Z ONLY)
S1
FUNCTION
DAT/AUX
CD
TUNER
PHONO
S2
TAPE MONITOR
ON
OFF
8 7 5 3 1
RED
S4
DIRECT
OFF
ON
S3
LOUDNESS
OFF
ON
VR3
BASS
VR4
TREBLE
VR2
BALANCE
VR1
VOLUME
B FRONT C.B
S7
B
S6
A
SPEAKERS
ON
OFF
PREPARATION CURRENT ADJUSTMENT
Settings : · VOLUME : MIN
· Test point : TP1 (Lch)
TP2 (Rch)
· Adjustment location : SFR1 (Lch)
SFR2 (Rch)
Method : · Connect a DC voltmeter across test points TP1, 2, adjust SFR1, 2 so that the voltage becomes 3.0±0.2mV.
(Adjustment after 20 minutes of power on.)


C POWER C.B (E,K,Z)
TO A MAIN C.B CON3-1
1 2 3 CON3-2
T.F
P.T1
F1
BLU
BRN
AC 220V 50Hz (E,Z ONLY) AC240V 50Hz (K ONLY)
D POWER SW C.B (E,K,Z)
5 3 1 CON2-2
TO A MAIN C.B CON2-1
C11
R125
R134
R132
R133
R131
S8 POWER
J4 PHONES
1 2 3
E LED C.B
LED
C POWER C.B (H MODEL ONLY)
TO A MAIN C.B CON3-1
1 2 3 CON 3-2
YEL
BLK
BLU
WHT
F2
T.F
P.T1
F1
BRN
GRN
AC120V/220V/240V 50Hz
D POWER SW C.B (H MODEL ONLY)
5 3 1 CON2-2
TO A MAIN C.B CON2-1
S8 POWER
J4 PHONES
E LED C.B
F AC VOLTAGE SW C.B (H MODEL) (ONLY)
WHT
GRN
BLK
YEL
SQ
SQ-2
SQ-1
SQ AC VOLTAGE 240V↔220V↔120V

# EXPLODED VIEW – 1

| REF.NO. | PART NO. | DESCRIPTION |
|---|---|---|
| A | 87-067-579-010 | $BVT_2$+3-8 W/O SLOT |
| B | 87-067-689-010 | BVTT+3-8 |
| C | 87-591-094-410 | QTT+3-6 |
| D | 87-067-660-010 | $BVT_2$+3-8 W/O SLOT |
| E | 87-743-096-410 | $UT_2$+3-10(B) |
| | | |
| F | 87-067-540-019 | SCREW CASE |

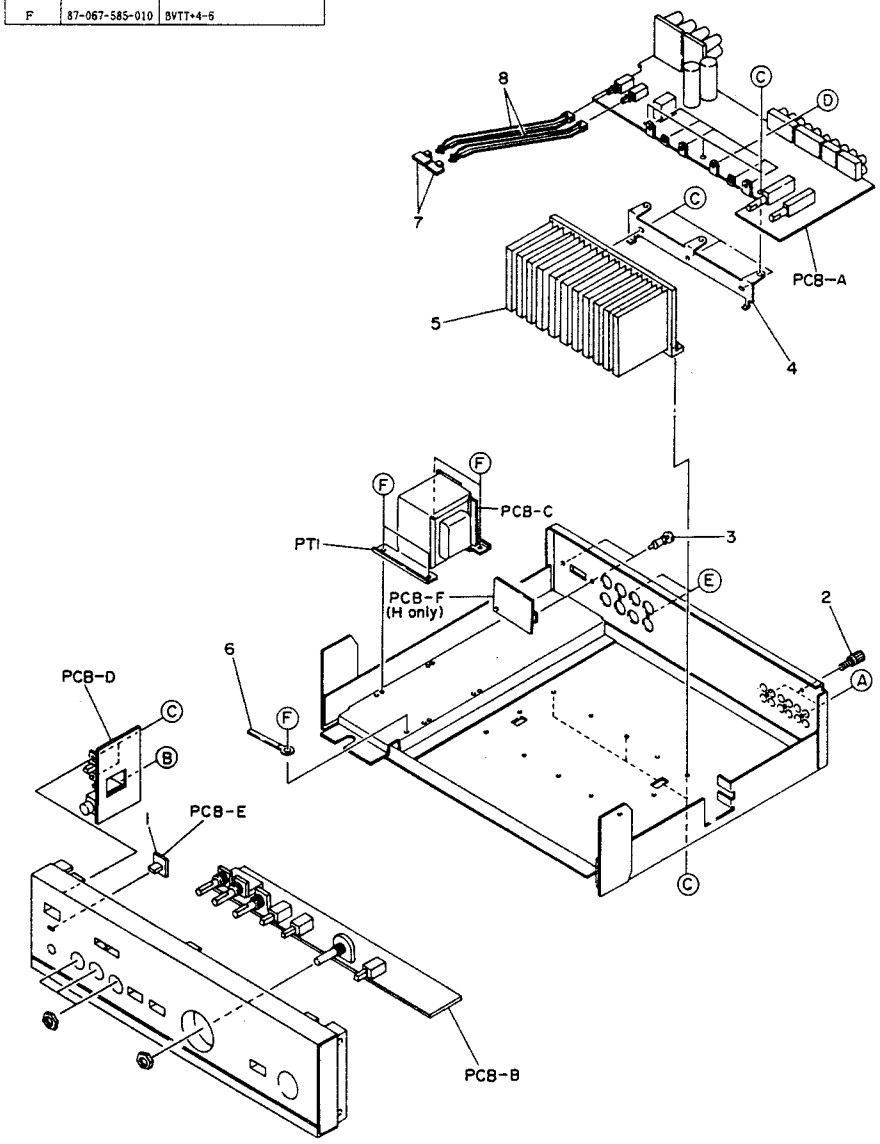


## MECHANICAL PARTS LIST

| PART NO. CHANGED TO | REF. NO. | PART NO. | DESCRIPTION | COMMON MODEL | Q. TY |
|---|---|---|---|---|---|
| | 1-1 | ★81-AA3-001-010 | PANEL, FRONT | * | 1 |
| | 1-2 | ★80-AA1-205-210 | ROD, SELECT | | 1 |
| | 1-3 | ★81-AA3-205-019 | STOPPER, SELECT | * | 1 |
| | 1-4 | ★80-AA1-007-019 | KNOB, SELECT | | 1 |
| | 1-5 | ★81-AA3-202-019 | ROD, KEY | * | 1 |
| | 1-6 | ★80-AA1-008-019 | BUTTON, MUTE | | 3 |
| | 1-7 | ★80-AA1-005-010 | KNOB, VOLUME | | 1 |
| | 1-8 | ★80-AA1-006-019 | KNOB, BALANCE | | 3 |
| | 1-9 | ★81-DS1-008-019 | BUTTON, POWER | | 1 |
| | 1-10 | ★84-764-009-119 | BADGE, AIWA | | 1 |
| | 1-11 | ★81-AA3-201-019 | GUIDE, BUTTON | * | 1 |
| | 1-12 | ★80-AA1-001-110 | CABINET, FRONT | | 1 |
| | 1-13 | ★81-663-213-019 | CLOTH, DIA 18-8.7 | | 1 |
| | 1-14 | ★81-DS2-018-010 | FOOT | | 2 |
| | 1-15 | ★80-AA1-207-019 | HOLDER, SIDE | | 2 |
| | 1-16 | ★80-DS3-206-019 | G-CUSHION, DIA 15-1 | | 2 |
| | 1-17 | ★80-DS3-014-119 | FOOT, REAR ST | | 2 |
| | 1-18 | --- | CHASSIS, MAIN | | 1 |
| | 1-19 | ★80-AA1-203-219 | HOLDER, PT | | 1 |
| | 1-20 | ★81-AA3-003-019 | PANEL, REAR(H) | * | 1 |
| | 1-20 | ★81-AA3-007-019 | PANEL, REAR(E) | * | 1 |
| | 1-20 | ★81-AA3-008-019 | PANEL, REAR(K) | * | 1 |
| | 1-20 | ★81-AA3-009-019 | PANEL, REAR(Z) | * | 1 |
| | 1-21 | ★87-085-184-010 | BUSHING, AC CORD(H) | | 1 |
| | 1-21 | ★87-085-185-010 | BUSHING, AC CORD(E, K, Z) | | 1 |
| | 1-22 | ★87-034-749-019 | AC CORD, H(H) | | 1 |
| | 1-22 | ★82-187-797-019 | AC CORD, E(E, Z) | | 1 |
| | 1-22 | ★82-187-796-019 | AC CORD BS(K) | | 1 |
| | 1-23 | ★81-AA3-011-019 | CABINET, STEEL | * | 1 |

## EXPLODED VIEW – 2

| REF.NO. | PART NO. | DESCRIPTION |
|---|---|---|
| A | 87-067-660-010 | BVT$_R$+3-8 W/O SLOT(B) |
| B | 87-561-096-210 | VFT$_L$+3-10 |
| C | 87-067-579-010 | BVT$_R$+3-8 W/O SLOT |
| D | 87-067-703-010 | BVT$_R$+3-10 W/O SLOT |
| E | 87-751-096-410 | VT$_R$+3-10 |
| F | 87-067-585-010 | BVTT+4-6 |




| PART NO. CHANGED TO | REF. NO. | PART NO. | DESCRIPTION | COMMON MODEL | Q.TY |
|---|---|---|---|---|---|
| | 2-1 | ★89-AA1-022-119 | GUIDE, LIGHT MUTE | | 1 |
| | 2-2 | ★87-033-209-010 | TERMINAL, EARTH | | 1 |
| | 2-3 | ★87-084-063-019 | RIVET, NYLON 3-5.5(H) | | 2 |
| | 2-4 | --- | HOLDER, PCB | * | 1 |
| | 2-5 | --- | HEAT-SINK, MAIN | * | 1 |
| | 2-6 | --- | WIRE BINDER | | 1 |
| | 2-7 | ★80-MK4-024-019 | BUTTON, TAPE | | 2 |
| | 2-8 | ★80-AA1-204-019 | ROD, SPKR | | 2 |

## ■ ACCESSORIES/PACKAGE LIST

| PART NO. CHANGED TO | REF. NO. | PART NO. | DESCRIPTION | COMMON MODEL | Q.TY |
|---|---|---|---|---|---|
| | 1 | ★81-AA3-901-010 | INSTRUCTION BOOKLET, EX | ※ | 1 |
| | 2 | ★87-009-724-010 | PLUG ADAPTOR, IR 39 (H) | | 1 |